

REISSUE
(8728-231)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**



Appellants: Suzuki et al.

Examiner: J. Dudek

Serial No.: 09/241,989

Group Art Unit: 2871

Filed: February 2, 1999

Docket: JA992-011 (8728-231)

For: OPTICAL FILM AND LIQUID CRYSTAL
DISPLAY DEVICE USING THE FILM

Assistant Commissioner of Patents
Washington, D.C. 20231

APPEAL BRIEF

In response to the Office Action dated May 5, 2000 finally rejecting Claims 8, 9, 11-42 under 35 U.S.C. 252, Applicants appeal pursuant to the Notice of Appeal filed on September 6, 2000 and submit this appeal brief.

04/11/2001 RHARIS1 00000069 500510 09241989
01 FC:120 310.00 CH

CERTIFICATE OF MAILING (37 C.F.R. § 1.8a)

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to the: Assistant Commissioner of Patents, Washington, D.C. 20231.

Date: 4/6/01

Frank Chau

RECEIVED
APR 12 2001
TC 2800 MAIL ROOM

TABLE OF CONTENTS

	<u>Page</u>
1. REAL PARTY IN INTEREST	1
2. RELATED APPEALS AND INTERFERENCES.....	1
3. STATUS OF CLAIMS	1
4. STATUS OF AMENDMENTS	1
5. SUMMARY OF INVENTION.....	2
6. ISSUE	2
7. GROUPING OF CLAIMS	3
8. ARGUMENT	3
A. Introduction	3
B. The Broadened Aspects of the Reissued Claims Do Not Relate To Subject Matter Surrendered to Obtain the Original Patent.....	4
C. The Top Angle Range of 90 Degrees to 120 Degrees Was Not Surrendered by Amendment or Arguments Made to Overcome Rejection	6
1. The teaching in Pritash did not dictate a specific top angle range.....	6
2. Kashima '350 disclosed top angle ranges which encompass either a top angle range of '95 degrees to 120 degrees' or '90 degrees to 120 degrees'	8
3. The Examiner Completely Ingored the Disclosure in the Cited Prior Art	10
D. Applicant did not surrender the 90 to 120 limitation by arguing that the specific top angle range 95-120 was the feature which overcame the rejection based on cited art	12
E. Conclusion.....	14
APPENDIX.....	A-1

1. Real Party in Interest

The real party in interest is IBM CORPORATION, the assignee of the entire right, title and interest in and to the subject reissue application by virtue of an assignment of record.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 1-9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41 are pending.

Claims 1 to 7 are allowed. Claims 8, 9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41 stand rejected and are under appeal.

A copy of the claims as pending is presented in the Appendix.

4. Status of Amendments

Claims 8, 9, 13, 20 and 24 were amended by Amendment after Final Rejection filed on August 30, 2000. This Amendment was entered. The claims as presented in the Appendix reflect entry of this amendment.

5. Summary of the Invention

The invention is an optical film and a liquid crystal display device using the film. The optical film is made of transparent material which comprises a first surface having an optically rough structure for diffuse transmitting incident light and a second surface having a wave structure including a plurality of isosceles triangle prisms arranged side by side, for directionally distributing the diffused-transmitted light through the second surface (U.S. Patent 5,600,462; Col. 2, lines 1 to 7). The optically rough structure of the first surface is similar to the surface of frosted glass. The structure provides a diffused transmission wherein light of the same intensity luminance is diffused in substantially all directions (32 in Fig. 3). The second surface of the optical film has a wave structure which includes a plurality of isosceles triangle prisms arranged side-by-side with peaks and valleys arranged in parallel to each other (9; Figs. 3-5). When the film is placed in a liquid crystal display device and light is projected onto the film, the incident light is diffuse-transmitted from the first surface and reaches the second surface at various angles and is refracted (Col. 4, lines 46 to 62, Figs. 3, 4 and 5). The light is refracted and directionally distributed within a viewing angle range relating to the structure of the second surface (Col. 5, lines 36 to 67, Figs. 6 and 7). The wave structured isosceles triangles with top angles made by the intersection of flat, angled surfaces form prisms to better gather the diffused light to increase the luminance within the viewing angle of the liquid crystal display device.

6. Issue

Whether claims 8, 9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41 were improperly broadened to recapture subject matter surrendered to obtain allowance of the original claims?

7. Grouping of Claims

Group I: Claims 1-7 are allowed and are not on appeal.

Group II: Claims 8, 9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41 are on appeal. Each of the claims under appeal stand or fall together.

8. Argument

A. Introduction

The Examiner has refused to recognize that a top angle range of '90 degrees to 120 degrees' was not surrendered in order to obtain allowance of the original claims. The Examiner erred for at least the following reasons: (1) although patentee amended original claims 1 and 3 in view of the Pritash reference to add the top angle range of 95 degrees to 120 degrees, the top angle range feature was not needed to distinguish from Pritash; in fact, Pritash did not dictate any specific top angle range (Paper 8, pages 1-4); (2) the primary prior art reference Kashima '351 disclosed top angle ranges which encompassed the top angle range of '95 degrees to 120 degrees' (See Kashima, column 3, lines 27 to 37); and (3) patentee characterized a top angle of '95 degrees to 120 degrees' as 'best' for refracting light into the desired viewing angles (Paper 16, page 5, lines 1-8), and did not use the top angle range of '95 degrees to 120 degrees' in argument to overcome the rejection based on Kashima '351.

The Pritash reference does not disclose a film having isosceles triangle prisms nor prisms having a top angle of any range. The Kashima reference discloses a film having a wave structure which can be regularly or irregularly spaced with convex lenses such as prisms or cones. The convex lenses having four separate top angle ranges, three of the four ranges encompass 95

degrees to 120 degrees. Kashima does not disclose a film having regularly spaced isosceles triangular prisms having a top angle formed by flat, angled surfaces.

In contrast, the features of the original claims which distinguished from the cited references were 'wave structured isosceles triangles with top angles made by the intersection of flat, angled surfaces to form prisms'.

The Examiner erroneously concludes that patentee's amendment to add the top angle range of 95 degrees to 120 degrees was necessary to overcome the Examiner's rejection based on prior art. Because the cited art did not dictate such specific top angle range, however, the rejection of Claims 8, 9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41 on the grounds that the claims were improperly broadened should be reversed.

B. The Broadened Aspects of the Reissued Claims Do Not Relate To Subject Matter Surrendered to Obtain the Original Patent

In every reissue application, the Examiner must first review each claim for the presence of broadening, as compared with the scope of the claims of the patent to be reissued. The Examiner must next determine whether the broader aspects of that reissue claim relate to subject matter that applicant previously surrendered during the prosecution of the original application. *In re Clement*, 131 Fed.3rd 1464, 45 U.S.P.Q. 2nd 1161 (Fed.Cir.1997). The Examiner erred in finding that the broader aspects of the reissue claims relate to subject matter surrendered during prosecution of the patented application.

The Examiner finally rejected reissue claims 8 and 9 and 11 to 42 under 35 USC § 251 as improperly broadened in a reissue application. The Examiner contended that a 'top angle range of 90 degrees to 120 degrees' is broader than the limitation of a 'top angle range of 95

degrees to 120 degrees,' and that the 95 degrees to 120 degrees limitation was originally presented in an amendment to distinguish the claimed invention from prior art to make the claims allowable in the original application. The Examiner reviewed the prosecution history of the original application file and concluded that the "prosecution history showed claims that were cancelled or amended which are now sought by the reissue application" (office action of May 5, 2000, page 4). Because the specific top angle range of 95 degrees to 120 degrees was not dictated by the prior art, nor was the top angle range the feature which overcame the prior art rejection, the Examiner erred in finding that a top angle of 90 degrees to 120 degrees was the limitation which was surrendered to obtain the original patent.

In the final rejection of May 5, 2000, the Examiner stated that, "claims 8 and 9 limitations are found in originally filed claims 1-2. Claims 1-2 claim "An optical film of transparant material, comprising: a first surface having a wave structure including a plurality of isosceles triangle prisms arranged side-by-side, and a second surface having an optically rough structure for performing diffuse transmission." The following is a record of the Examiner's review of the prosecution history of the original application file:

The originally filed claims 1 - 2 were rejected in paper No. 6 of patented application. The applicant then cancelled claim 2 and amended claim 1 by adding a range of 95 degrees to 120 degrees (Paper No. 8). The applicant later added to claim 1 the prisms having smooth surfaces (Paper No. 13). The Examiner then finally rejected claim 1 which included the smooth prism and range of 95 to 120. After an interview with the applicant's representative, the Examiner indicated that the claims as amended appear to be allowable (Paper No. 15). In the amendment, the applicant cancelled claims 1, 3, 6, 9, 13 and 15-21. The amended claims included a range of 95 degrees to 120 degrees and the applicant argued the criticality of this range (which the specification discloses and supports) in Paper No. 16. The prosecution history clearly shows claims that were cancelled or amended which are now sought by the reissue application. (Office Action of July 2, 1999, pages 3 and 4 and Office Action of May 5, 2000, pages 3 and 4).

We will show from the record of the Examiner's review of the prosecution history that the Examiner improperly applied the test for recapture. In particular, the Examiner failed to consider the disclosure of the cited prior art and whether the specific limitation of a top angle of 95 degrees to 120 degrees was the feature which distinguished from the prior art and overcame the rejection. See, *Mantor Corp. v. Coloplast, Inc.*, 998 Fed. 2d, 992, 995, 27 U.S.P.Q. 2nd 1521, 1525 (Fed. Cir. 1993) and MPEP §1412.02.

C. The Top Angle Range of 90 Degrees to 120 Degrees Was Not Surrendered by Amendment or Arguments Made to Overcome Rejection

An examination of the prosecution history of the original application and the record of the Examiner's review of the same will show that the Examiner's review of the prosecution history ignored the disclosure and teaching in the cited prior art and that the top angle range of 90 degrees to 120 degrees was not surrendered by amendment or arguments made to overcome a rejection based on prior art.

1. The teaching in Pritash did not dictate a specific top angle range.

In order to determine whether a claim element was subject matter that applicant had previously surrendered, the Examiner must determine whether the claim limitation was presented in an amendment or was specifically argued in direct reply to a rejection, and such amendment or argument was made to distinguish from the prior art rejection. *Hester Industries, Inc. v. Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1161 (Fed. Cir. 1997). It is clear from the Examiner's reasoning and review of the prosecution history that the teachings of the prior art were completely ignored (See Examiner's citation of prosecution history above and in the Office Action of July 2, 1999, pages 3 and 4 and the Office Action of May 5, 2000, pages 3 and

4). To illustrate, appellant makes a point by point comparison between the Examiner's review of the prosecution history and the relevant events of the prosecution history of the original application, with the Examiner's characterization of the prosecution history italicized:

Examiner:

The originally filed claims 1 - 2 were rejected in paper No. 6 of patented application.

The relevant events in the original prosecution history: In Paper No. 6, claims 1 and 3 were rejected under 35 U.S.C. Sec. 102 as anticipated by Pritash 5,005,108. Claims 1 to 9 were rejected under 35 U.S.C. Sec. 103 as unpatentable over Kashima '351 in view of Kashima EP140. Claim 2 as originally filed in the patented application included a top angle range of 90 degrees to 120 degrees and claim 4 included a top angle range of 95 degrees to 120 degrees.

Examiner:

The applicant then cancelled claim 2 and amended claim 1 by adding a range of 95 degrees to 120 degrees (Paper No. 8).

In direct response to the obviousness rejection based on the combination of Kashima' 351 and Kashima' EP140, applicant argued that Kashima ' EP140 has a filing date after the effective filing date of the patented application and therefore Kashima 'EP140 was not prior art to the invention. (paper no. 8, pages 3 and 4). Thus, the amendment of the claims were not made to overcome the Kashima references.

Pritash discloses a panel member comprising a solid transparent wave guide having a prismatic surface on one side to cause the light rays entering the wave guide through an input surface (end edge) to exceed the internal critical angle and be emitted. A back reflector is used

to redirect emitted light back through the panel. (Column 1, lines 29 to 42). Nowhere in Pritash is a top angle range described for the prismatic surface.

In direct response to the anticipation rejection based on Pritash, applicant canceled claims 2 and 4 and added the limitation of cancelled claim 4 including 'a top angle range of 95 degrees to 120 degrees' to claims 1 and 3. Applicant argued generally that amended claims 1 and 3 defined subject matter patentable over Pritash. In particular, applicant argued that the claimed structure "is in sharp contrast to the structures of Pritash et al wherein the second surface must be optically smooth (as opposed to optically rough as claimed) for total internal reflection to take place (as opposed to diffusion as claimed)." Thus, applicant's distinctions of the claimed invention from Pritash were based entirely on structures unrelated to any range of top angles of the prisms. Further, since Pritash made no mention of any prismatic top angle range, whether the amendment had added '95 degrees to 120 degrees' or '90 degrees to 120 degrees' would not have made any difference. Accordingly, the teaching in Pritash did not dictate any specific top angle range to be added to the original claims. Indeed, in the same amendment, applicant added claims 16-19 and the new claims were directed solely to structures unrelated to any range of top angles. This is further evidence of applicant's conclusion that the claims did not need any top angle range to distinguish from or overcome the prior art.

2. **Kashima '350 disclosed top angle ranges which encompass either a top angle range of '95 degrees to 120 degrees' or '90 degrees to 120 degrees'.**

The Examiner then described the next event in the prosecution history as the applicant later added to claim 1 the prisms having smooth surfaces (Paper No. 13): *The applicant later*

added to claim 1 the prisms having smooth surfaces (Paper No. 13). The Examiner then finally rejected claim 1 which included the smooth prism and range of 95 to 120.

Significant events in the prosecution file history were skipped over by the Examiner. For example, the Examiner failed to mention the rejection in paper no. 9, office action dated June 29, 1995, wherein claim 1 was rejected based on Kashima '351. The rejection in paper no. 9 issued prior to the addition of the 'smooth prism' limitation in claim 1 in paper no. 10. The reissue Examiner's failure to mention the rejection in paper no. 9 is significant because that rejection evidenced that the limitation of 'top angle of 95 degrees to 120 degrees' in the original claim did not make the claim allowable over the cited art.

Instead, claim 1 which included the top angle range of 95 degrees to 120 degrees was rejected under 35 USC 103 based on Kashima '351 and Ooi. The original Examiner stated that "Kashima '351 discloses that the front surface has protrusions such as prisms or convex lenses with angles preferably 90 to 110 degrees, however lacking from the disclosure are details of the prisms (being isosceles or quadrangular)...Ooi evidences this [symmetry problem] with asymmetrical prism..."

In response to the rejection based on Kashima '351 and Ooi, the 'prisms having smooth surfaces' limitation was added to claim 1. Interestingly, the '95 degrees to 120 degrees' limitation was deleted from claim 1, but the same limitation was added in claim 20, which depended from claim 1 (Paper no. 10). In this amendment, the '95 degrees to 120 degrees' limitation was not added to distinguish from the cited art, because it was specifically deleted from claim 1. In any event, such amendment did not overcome the rejection based on cited art because claims 1 and 20 were then finally rejected, again under 35 USC 103 based on Kashima '351 and Ooi (Paper no. 14).

The Examiner conveniently omitted these events of the file history because they evidenced that the 95 degrees to 120 degrees limitation did not overcome the prior art rejection.

3. The Examiner Completely Ingored the Disclosure in the Cited Prior Art

The Examiner then described the next event in the prosecution history as: *After an interview with the applicant's representative, the Examiner indicated that the claims as amended appear to be allowable (Paper No. 15). In the amendment, the applicant cancelled claims 1, 3, 6, 9, 13 and 15-21. The amended claims included a range of 95 degrees to 120 degrees and...*

Here again, the reissue Examiner casts a false light on the prosecution history, by creating the impression that 'the top angle of 95 degrees to 120 degrees' was the limitation added to the main claim to overcome the final rejection.

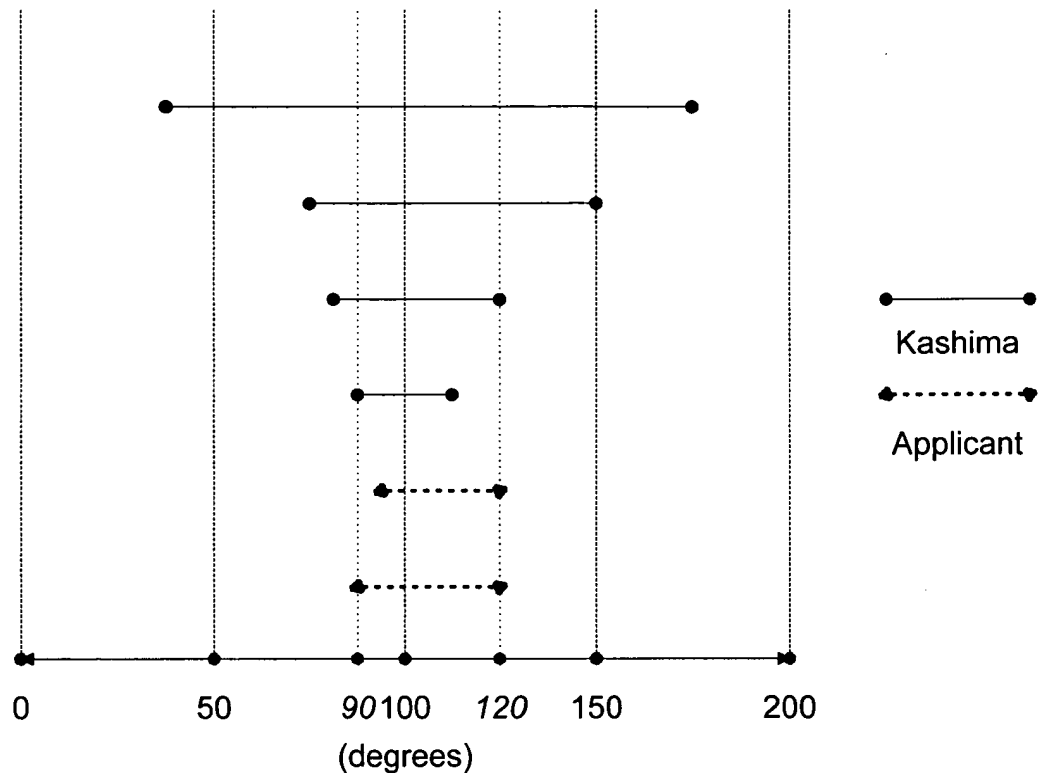
In response to the final rejection (paper no. 16), applicant canceled claim 1, but the main elements of the then pending claim 1, including "a film having a wave structure including a plurality of regularly spaced isosceles triangle prisms arranged side by side, the prisms having smooth surfaces, wherein a top angle of the isosceles triangle prisms is in a range of 95 degrees to 120 degrees," were not canceled. Instead, these elements were combined with the elements of the then pending claim 5, and additional remarks were made by the patent applicant to highlight the differences between the claimed wave structure of the film and the wave structure of the film as described in Kashima. The claim was then allowed.

Appellant respectfully submits that the reissue Examiner erred in rejecting the reissue claims on the grounds of improper recapture because the Examiner never determined whether

the limitation in question distinguished from the cited prior art. In fact, the disclosure in the cited art was ignored.

Kashima '351 disclosed a film for use in a backlighting device having an exit face made of light-transmissive material having a regular pattern or an irregular pattern. Kashima states that "the exit face of the film...the grained state of the exit face of the film under consideration may be such that said exit face in a section of the film taken at any point is composed of convex shapes (i.e., as shown in FIG. 6) such as prisms or cones similar to convex lenses, with the vertical angle being in the range of 40 to 170 degrees, preferably 80 to 150 degrees, further preferably 85 to 120 degrees, further more preferably 90 to 110 degrees" (column 3, lines 27 to 35).

If the Examiner had reviewed Kashima '351 and came across the above disclosure, he would have seen that any of the first three disclosed top angle ranges in Kashima encompasses the range of 95 degrees to 120 degrees claimed in the patented claims. The following chart illustrates how the Kashima top angle ranges (shown in solid lines) encompass the 90 to 120 degrees and the 95 to 120 degrees top angle ranges (shown in dotted lines).



Thus, it is abundantly clear that the top angle range of 95 to 120 degrees limitation could not have been the distinguishing feature which overcame the rejection based on Kashima '351. The Examiner's ignorance or refusal to consider the disclosure of the cited prior art is reversible error.

D. Applicant did not surrender the 90 to 120 limitation by arguing that the specific top angle range 95-120 was the feature which overcame the rejection based on cited art.

The Examiner then concluded his record of the prosecution history as: *the applicant argued the criticality of this range (which the specification discloses and supports) in Paper No. 16. The prosecution history clearly shows claims that were cancelled or amended which are now sought by the reissue application.*

This argument by applicant is also mischaracterized by the Examiner.

The remarks of the applicant in Paper no. 16 characterized the top angle range as: "The applicants have found that the angled top surfaces of the film 8 refract the light into the desired viewing angles best when the angle between those flat surfaces is between 95 to 120 degrees." This characterization is consistent with descriptions of the preferred top angle of a preferred embodiment of the invention (column 5, line 33 to column 6, line 8). The statement does not preclude the use of another preferred top angle, namely, 90 degrees to 120 degrees. Indeed, no mention was made in paper no. 16 that the specific top angle range, whether from 90 degrees or 95 degrees to 120 degrees, distinguished from Kashima '351.

Further, Applicant's characterization of the specific top angle range more particularly pointed out the advantages of the invention and could not have been construed as argument to overcome the rejection based on Kashima '351, because Kashima '351 disclosed numerous top angle ranges which encompassed the '95 degrees to 120 degrees' top angle range. Instead, the applicant's arguments centered on Kashima's failure to disclose wave structured isosceles triangles with top angles made by the intersection of flat, angled surfaces to form prisms. As such, Kashima cannot provide a more uniform distribution of light over the specified viewing angle.

Accordingly, the top angle of 90 degrees to 120 degrees was not subject matter surrendered during prosecution of the patented application. It follows that changing 95 degrees to 90 degrees in the top angle range in the reissue claims would not be recapture of subject matter surrendered.

E. CONCLUSION

The claims of the reissue application do not include broadened subject matter which relate to subject matter surrendered. The Examiner has failed to establish that the top angle of 90 to 120 degrees was subject matter surrendered, and that the reissue claims including a top angle of 90 to 120 degrees were improperly broadened under 35 USC 251. The board is respectfully requested to reverse the Examiner's rejection of claims 8, 9, 11-13, 15-20, 22-24, 26, 28, 29, 31, 32, 35-38, 40 and 41.

APPENDIX

8. An optical film of light transparent material including a first surface having an optically rough structure for diffuse-transmitting incident light and a second surface having a wave structure including a plurality of isosceles triangle prisms arranged side-by-side, the prisms having smooth surfaces for refracting said light diffuse-transmitted from said first surface and directionally distributing said diffuse-transmitted light through said second surface for increasing illumination within a viewing angle of about 35 degrees in the vertical direction and about 55 degrees in the horizontal direction wherein a top angle of said isosceles triangle prisms is a range of about 90 degrees to about 120 degrees.

9. An optical film of light transparent material including a first surface having an optically rough structure for diffuse-transmitting incident light and a second surface having a wave structure including a plurality of isosceles triangle prisms arranged side-by-side, the prisms having smooth surfaces for refracting said light diffuse-transmitted from said first surface and directionally distributing said diffuse-transmitted light through said second surface wherein a top angle of said isosceles triangle prisms is in a range of about 90 degrees to about 120 degrees, wherein the tops of the isosceles triangle prisms are no more than 160 μm apart.

11. The optical film according to claim 8, wherein a polarizer is positioned between a liquid crystal display panel and said optical film, wherein a direction along which peaks and valleys of said isosceles triangle prisms are oriented is aligned in parallel to a polarizing axis of said polarizer.

12. The optical film according to claim 8, wherein the tops of the isosceles triangle prisms are no more than 160 μm apart.

13. A liquid crystal display device including a liquid crystal display panel and a back light device, said back light device comprising:

a light source for emitting light;

a light guide having a top surface facing a back surface of said display panel and a side surface receiving said light from said light source;

a reflector provided on a back surface of said light guide; and

an optical film of light transparent material positioned between said back surface of said liquid crystal display panel and said top surface of said light guide, said optical film including a first surface having an optically rough structure for diffuse-transmitting said light from said light guide and a second surface having a wave structure including a plurality of isosceles triangle prisms arranged side-by-side, the prisms having smooth surfaces for refracting said light diffuse-transmitted from said first surface to gather light passing through said second surface in a direction toward said display panel, wherein a top angle of said isosceles triangle prisms of said optical film is in a range of about 90 degrees to about 120 degrees for flat, angle prism surfaces to gather light from the diffuse transmission and directionally distribute said light within a range defined by a given angle.

15. The liquid crystal display device according to claim 13, wherein luminance of

said gathered light is increased within and decreased outside of a desired viewing angle of about 35 degrees in the vertical direction and about 55 degrees in the horizontal direction of said display panel.

16. The liquid crystal display device according to claim 13, further including a second optical film positioned between said back surface of said liquid crystal display panel and said top surface of said light guide, wherein a direction along which peaks and valleys of said isosceles triangle prisms of one of said two optical films are oriented is at an angle with respect to a direction along which peaks and valleys of said isosceles triangles prisms of another of said two optical films are oriented.

17. The liquid crystal display device according to claim 16, wherein said angle is perpendicular.

18. The liquid crystal display device according to claim 16, wherein a polarizer is positioned between said liquid crystal display panel and said two optical films, and a direction along which peaks and valleys of said isosceles triangle prisms of said optical film closer to said polarizer is oriented in parallel to a polarizing axis of said polarizer.

19. The liquid crystal display device according to claim 13, wherein the tops of the isosceles triangle prisms are no more than 160 μm apart.

20. An optical film for use in a liquid crystal display having a front portion and a back portion, said optical film comprising:

diffusing means for diffuse-transmitting light illuminated proximal to said back portion of said display; and

refracting means including a plurality of isosceles triangle prisms arranged side-by-side for directionally distributing said diffuse-transmitted light toward said front portion of said display and for increasing luminance of light within a viewing angle of about 35 degrees in the vertical direction and about 55 degrees in the horizontal direction of said front portion of said display, wherein a top angle of said isosceles triangle prisms is in a range of about 90 degrees to about 120 degrees.

22. The optical film according to claim 20, wherein the tops of the isosceles triangle prisms are no more than $160\text{ }\mu\text{m}$ apart.

23. The optical film according to claim 20, wherein a polarizer is positioned between said front portion of said liquid crystal display and said optical film, wherein a direction along which peaks and valleys of said isosceles triangle prisms are oriented is aligned in parallel to a polarizing axis of said polarizer.

24. A film for use in an optical system comprising a light source and a polarizer having a polarization axis, the film comprising a transparent material including a first surface and a second surface, said first surface having a structure including a plurality of isosceles triangular prisms arranged side-by-side for increasing luminance of light passing through said

film in a direction corresponding to said polarization axis of said polarizer, and said second surface having an optically rough structure for diffuse transmitting light emitted by said light source, wherein a top angle of said isosceles triangle prisms is in a range of about 90 degrees to about 120 degrees, wherein the tops of the isosceles triangle prisms are no more than 160 μm apart.

26. The optical film according to claim 24, wherein said optical film is positioned within a liquid crystal display, said prisms having smooth surfaces for gathering diffuse transmitted light for increasing illumination within and decreasing illumination outside of a viewing angle of about 35 degrees in the vertical direction and about 55 degrees in the horizontal direction of the liquid crystal display.

28. The film according to claim 8, further including a variation in pitches between the tops of adjacent isosceles triangle prisms.

29. The film according to claim 28, wherein said variation is less than 10% of the distance of the pitches.

31. The film according to claim 9, further including a variation in pitches between the tops of adjacent isosceles triangle prisms.

32. The film according to claim 31, wherein said variation is less than 10% of the distance of the pitches.

35. The film according to claim 13, further including a variation in pitches between the tops of adjacent isosceles triangle prisms.

36. The film according to claim 35, wherein said variation is less than 10% of the distance of the pitches.

37. The film according to claim 20, further including a variation in pitches between the tops of adjacent isosceles triangle prisms.

38. The film according to claim 37, wherein said variation is less than 10% of the distance of the pitches.

40. The film according to claim 24, further including a variation in pitches between the tops of adjacent isosceles triangle prisms.

41. The film according to claim 40, wherein said variation is less than 10% of the distance of the pitches.